



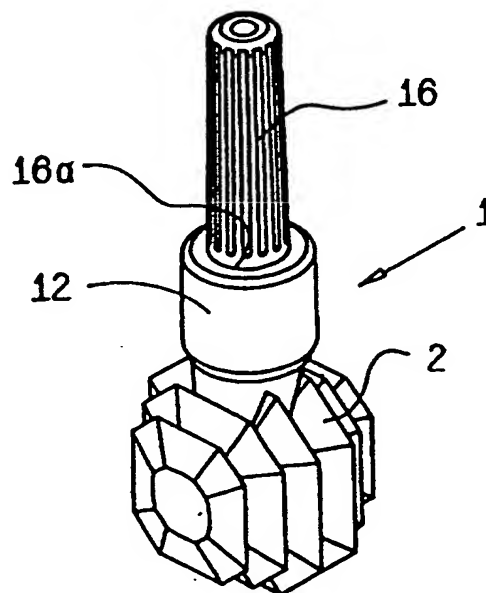
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>B65D 1/32, 47/10, 55/02</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 96/22919</b> <b>(43) International Publication Date:</b> 1 August 1996 (01.08.96)
<b>(21) International Application Number:</b> PCT/EP95/00249 <b>(22) International Filing Date:</b> 25 January 1995 (25.01.95) <b>(71) Applicant (for all designated States except US):</b> LAMEPLAST S.R.L. [IT/IT]; Via G. Verga, 9/27, I-41030 Rovereto di Novi (IT). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> FONTANA, Antonio [IT/IT]; Via Due Ponti, 82, I-41012 Carpi (IT). FERRARI, Giovanni [IT/IT]; Via Stoccolma, 9, I-41012 Carpi (IT). FABBRI, Evro [IT/IT]; Via Provinciale Motta, 60, I-41016 Novi Di Modena (IT). <b>(74) Agent:</b> GARDI, Giuliano; Gardipatent, Via Giardini, 605, I-41100 Modena (IT).		<b>(81) Designated States:</b> BR, CA, CN, MX, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** DEFORMABLE CONTAINER FOR INJECTING MEDICINAL OR COSMETIC SUBSTANCES

**(57) Abstract**

The deformable container for injecting medicinal or cosmetic substances, for dispensing a dose of medicinal, or cosmetic, substance, in the form of a liquid or a foam, and injecting it into a cavity of the human body, that may be more easily used and almost completely emptied consists of a body in the form of a bellows (2) associated with a cannula (7, 21), the axis of the bellows and the axis of the cannula being substantially perpendicular to each other; it is used in the pharmaceutical and cosmetic industries.



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## DEFORMABLE CONTAINER FOR INJECTING MEDICINAL OR COSMETIC SUBSTANCES

The present invention concerns a deformable container for injecting medicinal or cosmetic substances, that is, a container for dispensing a dose of medicinal, or cosmetic, substance, in the form of a liquid or a foam, and injecting it into a cavity of the human body, for example, into the anal cavity, the nose or the ears.

The state of the art includes the italian patent for utility model No. 213.228 by the same applicant, concerning a bellows dispenser for medicinal substances for microenemas, with incorporated cannula, including bellows with a cylindrical body equipped with a cannula whose axis is aligned with the axis of the bellows.

The said bellows dispenser is rather uncomfortable to use, in that it obliges the user to rotate his wrist in order to squeeze the body of the bellows; furthermore, it is impossible to completely empty the said body, as the reduction in the axial length of the bellows when it is compressed is limited by the folds of the bellows being brought close with each other.

The incomplete discharge of the body of the bellows makes it impossible to make use of all the substance contained in the dispenser.

The state of the art also includes deformable containers, with drip nozzle or atomiser, for introducing liquids in the nasal cavity or in the ears; the said containers also have the defect that they are difficult to empty completely, due to the limited deformability of the said container.

The present invention sets out to resolve the technical problem of finding a deformable container for injecting medicinal or cosmetic substances, in the form of a liquid or a foam, into cavities of the human body, that can be almost completely emptied, reducing to a minimum the quantity of substance contained in it that can not be used and which does not oblige the user to perform unnatural rotations of the wrist when using the container.

The present invention resolves the said technical problem by

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adopting a deformable container having a body in the form of a bellows and a dispensing cannula, characterised in that the axis of the bellows and the axis of the cannula are substantially perpendicular to each other, the section of the bellows having progressively increasing dimensions, from the extremities towards the centre of the bellows.

The advantages offered by the invention are: it is easier and more comfortable to use, particularly when the container is used for microenemas; the container can be almost completely emptied, thereby reducing to a minimum the quantity of substance that is not used; simplicity and low production costs.

Some embodiments of the invention are illustrated, purely by way of example, in the two tables of drawings attached in which Figure 1 is a perspective view of a first version of container as described; Figure 2 is a view as in Figure 1, with the protective stopper removed; Figure 3 is an exploded, partially sectioned view of the container in Figure 1; Figure 3A is a partial longitudinal section of the container in Figure 1, assembled; Figure 4 is a side view of the container in Figure 1 during use; Figure 5 is a view as in Figure 1, relating to a second version of the container as described with a cannula plug; Figure 6 is a view as in Figure 3, relating to the container in Figure 5; Figure 7 is a view as in Figure 3A, relating to the container in Figure 5.

Figure 1 shows a container according to the invention, consisting of a body 2 in the form of a bellows, with a neck 3, whose axis is perpendicular to the axis of the bellows. The body 2 of the bellows is made up of a number of pairs of layers folded as in an accordion, with transverse dimensions increasing from the extremities of the bellows towards the centre and with the intermediate layers being annular in shape.

The outline of the layers can be polygonal or curved.

The body 2 is therefore collapsible in a double truncated pyramid or cone with the wide bases at the centre.

The neck 3, (Figure 3) has an external ring 4, in an intermediate position, and a conical enlargement at the opening 6 of the said neck.

## 3

A cannula shaped dispenser 7 is inserted in the opening 6 of the neck 3, the said dispenser having at its lower end a ring 8 bearing on the rim of the neck 3, and a lower cylindrical enlargement 9 for its insertion in opening 6 of the neck 3 so as to form a seal. A cap 11 is inserted on the cannula 7 and the neck 3, consisting of a hollow cylindrical base 12, whose internal diameter is smaller than the external diameter of the ring 4 to enable the lower edge of the said base to sit on it. Inside the said cylindrical base there are: a seat 13 for the snap insertion of the ring 8 of the cannula 7; a conical seat for the insertion in it of the conical enlargement 5 of the neck 3 of the container 1 and an annular projection 15 acting as undercut for the enlargement 5. The top of the cap 11 ends in a removable stopper 16 connected with the base 12 along a predetermined fracture line 16a. The stopper 16 has an internal protuberance 17 to close the dispensing aperture 18 of the cannula 7.

Figure 5 shows a second version 19 of the container as described in which the cannula 7 and the cap 11 are replaced with an integrated cap 20 with a cannula 21 (figure 6). The base 22 of the cap 20 is hollow with, on its inside, a conical seat 23 for the enlargement 5 of the neck 3 and annular projection 24 acting as undercut for the enlargement 5. Inside the cap 20 a substantially cylindrical protuberance 25 extends downwards that is inserted in and seals the neck 3.

A removable closing seal 26 for the opening 27 of the cannula 21 is connected to the said opening along a predetermined fracture line.

Operation is as follows: once the stopper 16, or the seal of guarantee 26, has been removed, the cannula 7, or 21, is inserted in the cavity of the body in which the substance contained in the container 1, or 19, has to be introduced, and the body 2 of the container is compressed in a transverse direction with respect to the axis of the cannula, so dispensing the substance contained in the body 2.

It is to be noted that with the layers of the body 2 of the bellows completely compressed, the configuration of the layers of the

bellows, with dimensions decreasing outwards, enable a greater degree of compression and, consequently, a better emptying of the body 2.

In the case of the first version of container, as in Figures 1 to 3A, it is possible to close the container by inserting stopper 16 in the cannula 7 in such a way that the internal protuberance 17 shuts off the opening 18 of the cannula: this enable one or more subsequent utilisations of the container.

In practice the materials, dimensions and details of execution may be different from but technically equivalent to those described without departing from the juridical domain of the present invention.

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**CLAIMS**

1. A deformable container for dispensing medicinal or cosmetic substances, having a body in the form of a bellows (2) and a dispensing cannula (7, 21), characterised in that the axis of the bellows (2) and the axis of the cannula (7, 21) are substantially perpendicular to each other.
2. A deformable container, as claimed in claim 1, characterised in that the body of the bellows (2) is made up of a number of pairs of layers folded as in an accordion, with transverse dimensions increasing from the extremities towards the centre of the said body.
3. A deformable container, as claimed in claim 2, characterised in that the outline of the layers can be polygonal or curved.
4. A deformable container, as claimed in any one of claims 1 to 3, characterised in that the said body of the bellows (2) has a neck (3) that is equipped with devices (4, 5) coupling with sealed closure elements (11, 20).
5. A deformable container, as claimed in any one of claims 1 to 3, characterised in that the said cannula (7) has devices (8, 9) to couple it to the said neck (3).
6. A deformable container, as claimed in claim 4, characterised in that the said closing element (11) consists of a cap having a hollow base (12) which is substantially cylindrical, having, on its inside, devices (13, 14, 15) to provide a sealing coupling with said neck (3) and said cannula (7), and of a stopper (16) fixed in a removable manner to the said base (12), the said stopper having an internally protruding bung (17).
7. A deformable container, as claimed in claim 4, characterised in that the said closing element (20) consists of a cap integrated with said cannula (21), the said cap consisting of a hollow base (22), having on its inside devices (23, 24, 25) to provide a sealing coupling with said neck (3).

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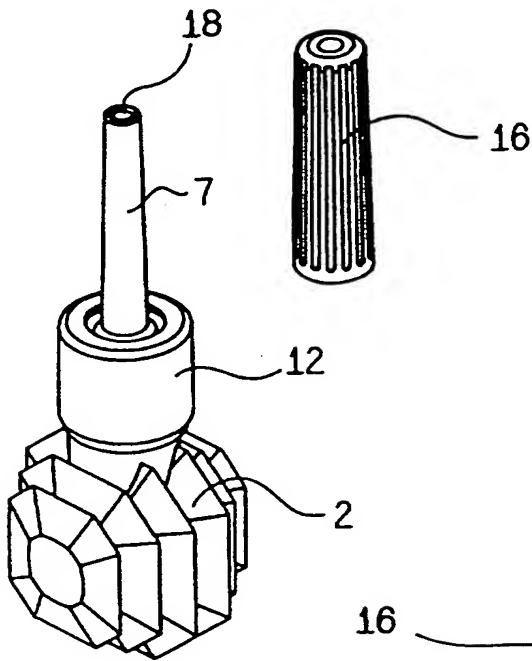


FIG. 2

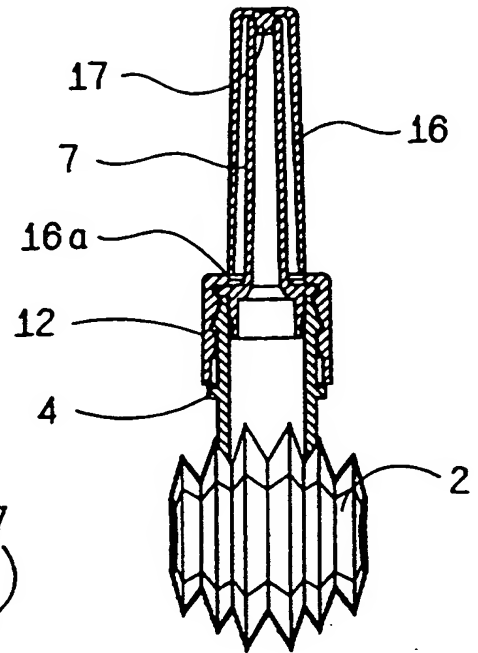


FIG. 3A

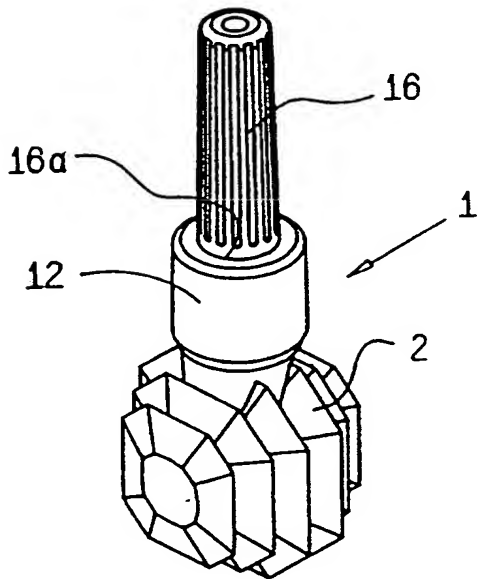
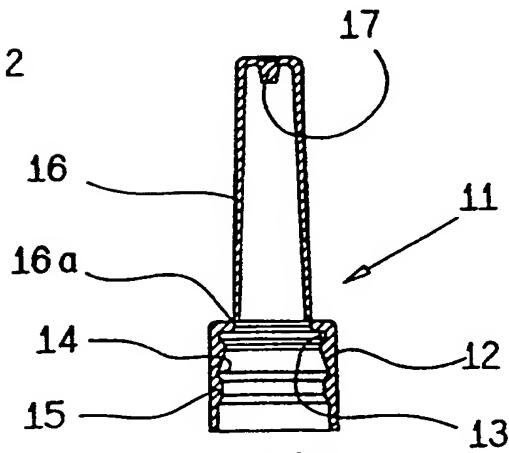


FIG. 1

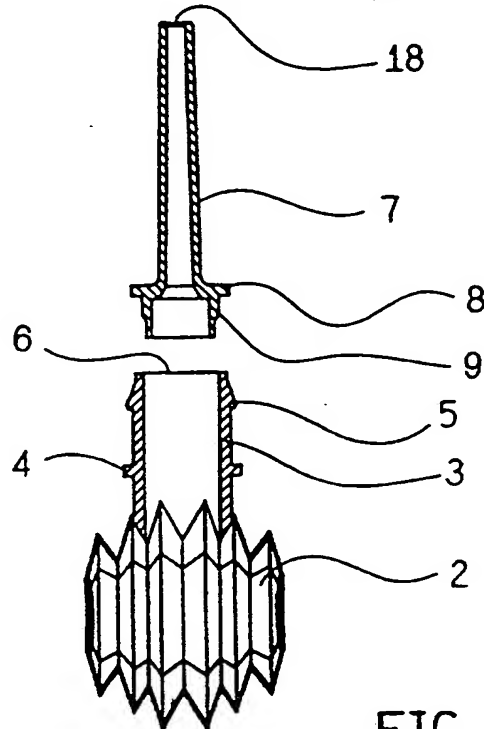
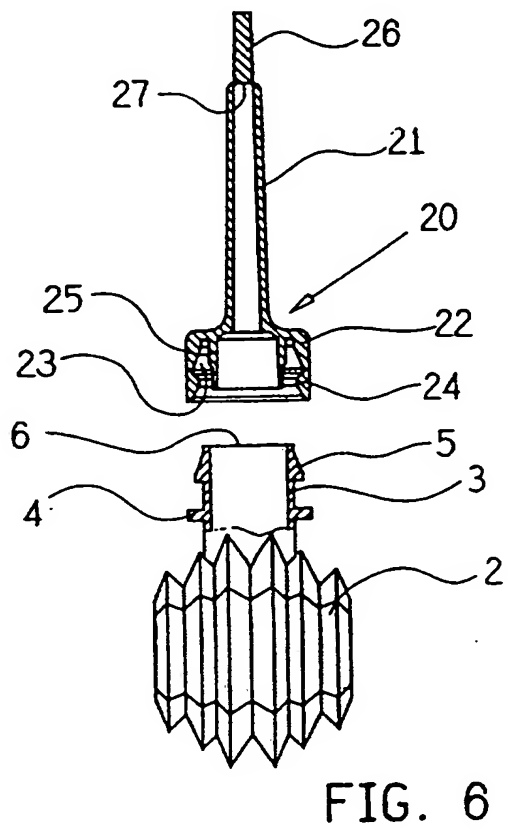
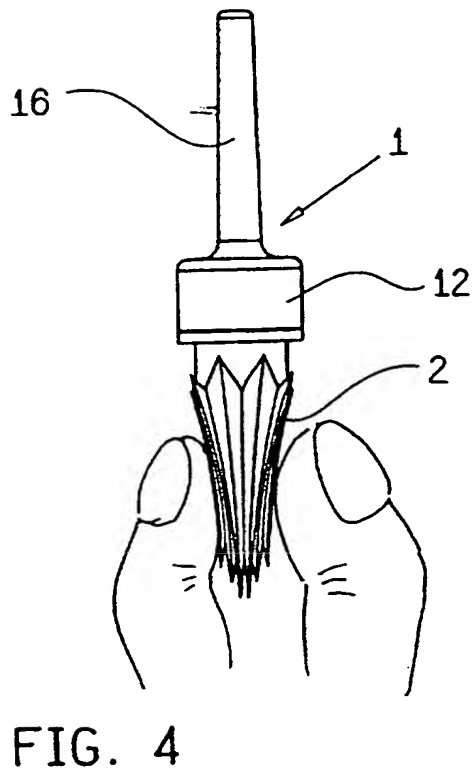
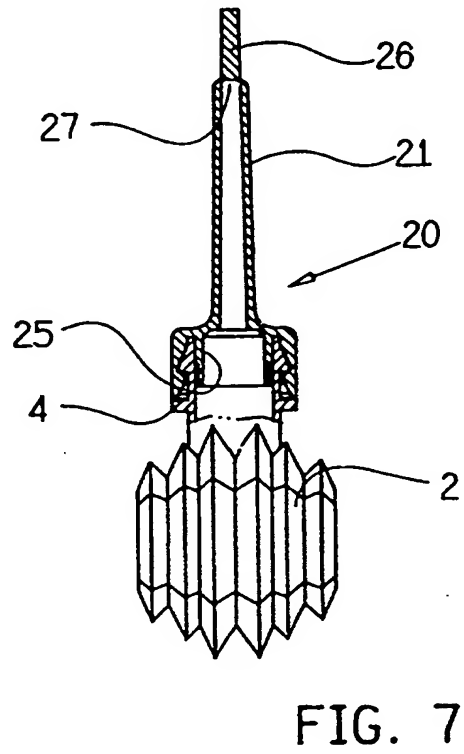
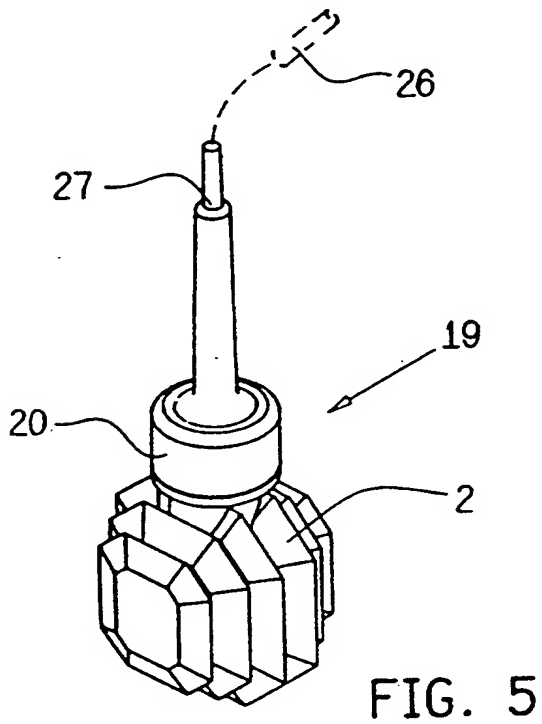


FIG. 3



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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 95/00249

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B65D1/32 B65D47/10 B65D55/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B05B B65D F16N A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB,A,775 799 (THE GILLETTE COMPANY) 29 May 1957 see page 2, line 59 - line 82; figures 5,6 ---	1-3
X	FR,A,2 456 667 (INTRADAL NV) 12 December 1980 see page 3, line 28 - line 32; figures ---	1-3
X	GB,A,798 338 (CRYSTAL PRODUCT COMPANY LIMITED) 16 July 1958 see page 1, line 62 - line 70; figures ---	1-3
X	FR,A,2 004 243 (J. R. GEIGY S.A.) 21 November 1969 see claims; figures --- -/--	1-3

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

25 September 1995

Date of mailing of the international search report

13.12.1995

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# INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,3 580 427 (ROBERT E. CLARKE) 25 May 1971 see claims; figures ---	1-3
A	FR,A,2 576 876 (MALLET FR D RIC DAVID PIERRE) 8 August 1986 see abstract; figure 1 ---	1-3
A	US,A,5 273 086 (ESTIBAL) 28 December 1993 see abstract; figures -----	1-3

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 95/00249

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1) Claims: 1-3

2) Claims: 4-7

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Claims: 1-3

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. l. Application No

PCT/EP 95/00249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-775799		NONE	
FR-A-2456667	12-12-80	NONE	
GB-A-798338		NONE	
FR-A-2004243	21-11-69	NL-A- 6903765	23-09-69
US-A-3580427	25-05-71	NONE	
FR-A-2576876	08-08-86	NONE	
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		FR-A- 2675364	23-10-92
		EP-A- 0509888	21-10-92